

REMARKS

Prior to the present amendment and response, claims 1-9 were pending in the present application, claims 10-15 having been canceled by previous amendment. By the present amendment and response, Applicants have amended claims 1-5, and have canceled claims 8 and 9. Thus, claims 1-7 remain in the present application. Reconsideration and allowance of outstanding claims 1-7 in view of the above amendments and the following remarks are respectfully requested.

A. Rejection of claims 1-9 under 35 USC §102(b)

The Non-Final Office Action of January 16, 2009 (hereinafter "Office Action") rejects claims 1-9 under 35 USC §102(b) for purported anticipation by U.S. Patent Number 5,780,891 to Kauffman et al. (hereinafter "Kauffman"). See, page 2, item 2 of the Office Action. For the reasons discussed below, Applicants respectfully submit that the present invention, as defined by independent claim 1, is patentably novel and distinguishable over Kauffman.

Applicants have repeatedly pointed out that a patentably distinctive difference between the present invention, as defined by independent claim 1, and the disclosure provided by Kauffman, is the disposition of the anti-reflective interpoly layer in the core stack comprised by the present invention's flash memory device. Moreover, Applicants have previously amended independent claim 1 to emphasize that patentably distinguishable structural difference, unambiguously reciting "an anti-reflective interpoly

layer atop and in contact with the first polysilicon layer.” *See*, claim 1 of the present application.

In contrast to the structure described and specifically claimed by the present application, the teaching of Kauffman requires formation of an intervening silicon dioxide layer between the first polysilicon layer and the anti-reflective interpoly layer. Specifically, Kauffman teaches that first silicon dioxide layer 20 (rather than an anti-reflective interpoly layer) is formed on first polysilicon layer 18. *See*, col. 3, lines 60-64, and Figure 3 of Kauffman. Subsequently, “oxynitride layer 22 is deposited over first silicon dioxide layer 20,” (not first polysilicon layer 18). *Id.* at col. 4, lines 1-3, and Figure 3. Furthermore, Kauffman is unequivocal in stating that the anti-reflective interpoly layer provided by silicon oxynitride is not to be conflated or confused with other interpoly materials: “In the present invention, by contrast, the oxynitride film is a separate and distinct compound deposited over the underlying layer of silicon dioxide.” *Id.* at column 2, lines 47-50.

Nevertheless, and despite being apparently unable to provide a specific reference in Kauffman, the Office Action reiterates the naked assertion that Kauffman discloses “an anti-reflective interpoly layer atop and in contact with a first polysilicon layer.” *See*, page 2, item 2 of the Office Action. Careful review of Kauffman, however, reveals beyond reasonable dispute that this assertion is in fact incorrect. Quite on the contrary, not only does Kauffman fail to disclose an interpoly dielectric layer atop and in contact with a first polysilicon layer, as asserted by the Office Action, the teaching in Kauffman

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affirmatively requires the presence of bottom oxide layer 20, while characterizing top oxide layer 24 as desirable but not required.

According to every embodiment disclosed in Kauffman, first oxide layer 20 is formed on polysilicon layer 18, and oxynitride layer 22 is formed on first oxide layer 20. See, col. 3, line 59 – col. 4, line 3 of Kauffman, referring to Figures 3 and 4. In addition, in a preferred embodiment, second oxide layer 24 is formed on oxynitride layer 22. *Id.* at col. 4, lines 23-32. Under no circumstances, however, does Kauffman teach an interpoly dielectric without using the bottom oxide layer 20, as asserted but not substantiated by the Office Action. Consequently, and contrary to the interpretation advanced by the Office Action, Kauffman fails to teach, or even suggest, an anti-reflective interpoly layer atop and in contact with a first polysilicon layer, as described in the present application and specifically claimed by independent claim 1. Applicants note that independent claim 1 is currently amended for reasons other than avoidance of the art reference provided by Kauffman. It is further noted that original claims 8 and 9 are canceled for reasons unrelated to Kauffman as well.

For the foregoing reasons, Applicants respectfully submit that at the time the invention defined by independent claim 1 was made, the invention was not anticipated by, nor would have been obvious in light of the disclosure provided by Kauffman. As a result, claims 2-7, depending from independent claim 1, are also patentably novel and inventive over Kauffman for the additional limitations contained in each dependent claim.

B. Rejection of claims 1-5, 7, and 8 under 35 USC §102(b)

The Office Action further rejects claims 1-5, 7, and 8 for purported anticipation by U.S. Patent Number 5,888,870 to Gardner et al. (hereinafter "Gardner"). See, page 3, item 3 of the Office Action. For the reasons discussed below, Applicants respectfully submit that the present invention, as defined by currently amended independent claim 1, is patentably novel and distinguishable over Gardner.

Applicants have been frank in acknowledging that the present application is directed to an interpoly dielectric purposefully configured to have advantageous anti-reflective properties. To that end, Applicants explain some of the design objectives of their novel structure:

In operation, a photoresist layer 52 is placed over the substrate 42 and core stack 40. A light source with a wavelength λ_1 is applied to the resist, where the resist reacts to light with a wavelength λ_1 . The polysilicon or amorphous silicon of the transmissive second polysilicon layer 50 is largely transparent to light of the wavelength λ_1 allowing the light to pass through the transmissive second polysilicon layer 50 to the anti-reflective interpoly layer 48. . . . For light of wavelength λ_1 , the anti-reflective interpoly layer 48 may be tailored in its thickness d and its index of refraction n to minimize reflection . . . thus allowing a more detailed imaging of the photoresist layer 52. See, page 3, line 12, through page 4, line 6 of the present application, referring to Figure 2.

Independent claim 1 is currently amended to emphasize this purposeful configuration of the recited anti-reflective interpoly layer for use with exposure light of a certain wavelength. Claims 2-5 are also currently amended to harmonize them with the changes to independent claim 1, from which they depend. In addition, claims 8 and 9 are

canceled to eliminate redundancy otherwise produced by their presence in light of the current amendments to claims 1-5.

In contrast to the present inventive concepts, the disclosure provided by Gardner expresses no interest in the anti-reflective properties of its interpoly dielectric layer. This is unsurprising, however, in so far as the focus, in Gardner, is purely on the dielectric properties of the disclosed interpoly dielectric, to the exclusion of any optical properties possessed by the material selected for use in that role. As Gardner explains, the purpose of the disclosed invention is to provide an interpoly dielectric resulting in “reduced control gate-to-floating gate capacitance which is substantially resistant to interpoly dielectric breakdown.” *See*, col. 3, lines 9-12.

According to Gardner, the disclosed invention achieves success by polishing the upper surface of its floating gate polysilicon layer, and depositing an interpoly dielectric comprising oxynitride or a relatively high K ceramic on the polished surface. *See, Id.* at col. 6, lines 46-65. Moreover, the interpoly dielectric of Gardner has its thickness optimized so as to resist breakdown while also being sufficiently thin to reduce capacitive coupling of the floating gate to a control gate. *Id.* at col. 7, lines 2-10. Thus, Gardner is entirely indifferent to the optical properties of its interpoly dielectric, and consequently fails to disclose or suggest an “anti-reflective interpoly layer having an index of refraction n and a thickness d and being configured for use with a light having a wavelength λ_1 , such that d is an odd numbered multiple of approximately $\lambda_1/4n$,” as is described by Applicants’ disclosure and specifically recited by currently amended independent claim 1 of the present application.

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For the foregoing reasons, Applicants respectfully submit that at the time the invention defined by currently amended independent claim 1 was made, the invention was not anticipated by, nor would have been obvious in light of the disclosure provided by Gardner. As a result, claims 2-5 and 7, depending from currently amended independent claim 1, are also patentably novel and inventive over Gardner for the additional limitations contained in each dependent claim.

C. Rejection of Claims 6 and 9 under 35 USC § 103(a)

The Office Action also rejects claims 6 and 9 under 35 USC §103(a) as being unpatentable for purported obviousness over Gardner. *See*, page 5, item 6 of the Office Action. However, as discussed above, currently amended independent claim 1 is patentably novel and inventive over Gardner. As such, claims 6 depending from independent claim 1 through dependent claim 5 is also patentably novel and inventive over Gardner, for at least the reasons presented above and also for the additional limitations contained in claims 5 and 6. Applicants note that claim 9 is cancelled by the present amendment and response, rendering the obviousness rejection moot as applied to claim 9.

D. Conclusion

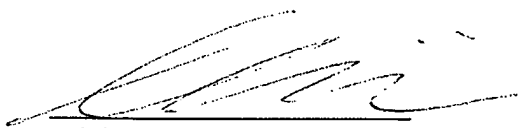
Based on the foregoing reasons, the present invention, as defined by currently amended independent claim 1 and claims depending therefrom, is patentably distinguishable over the art cited in the Office Action. Moreover, Applicants assert that

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no new matter has been introduced herein. Thus, claims 1-7 pending in the present application are patentably distinguishable over the cited art. As such, and for all the foregoing reasons, allowance of claims 1-7 pending in the present application is respectfully requested.

The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment to Deposit Account No. 50-0731.

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